The South African Journal
of
Medical Laboratory Technology

ORGAN OF THE SOCIETY OF MEDICAL LABORATORY
TECHNOLOGISTS OF SOUTH AFRICA

Vol. 2, No. 2 A QUARTERLY June, 1956

EDITOR:
C. R. STUART

Single Numbers 5/6 Annual Subscription £1/1/0

OFFICERS OF THE NATIONAL SOCIETY

Chairman: Dr. F. A. BRANDT, c/o S.A.I.M.R., P.O. Box 1038, Johannesburg.

Secretary-Treasurer: Mr. G. W. WIKELEY, c/o Central Pathological Laboratory, Private Bag, Jacobs, Natal.

•

Branch Secretaries:

NATAL: Mr. V. ALBERTO, Union Health Dept. Laboratory, Currie Road, Durban.

CAPE: Mr. J. MAYTHAM, Dept. of Bacteriology, Medical School, Mowbray, Cape.

SOUTHERN TRANSVAAL: Mrs. G. TOMLIN, P.O. Box 1038, Johannesburg.

THE SOUTH AFRICAN JOURNAL OF MEDICAL LABORATORY TECHNOLOGY

Editorial Committee:

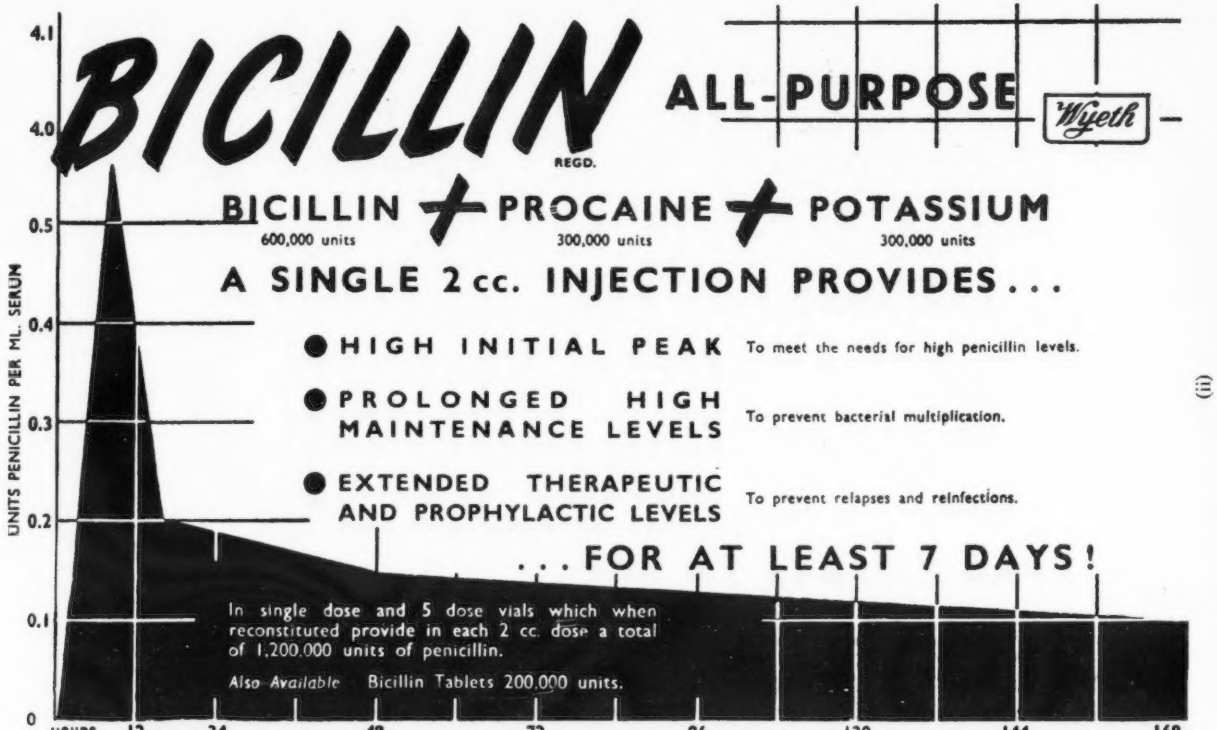
Mr. C. R. STUART (*Chairman and Editor*).
Mr. P. N. BUCK (*Secretary and Advertising Manager*).
Mr. R. HORNER (*Circulation Manager*).
Miss I. E. MULLER. (*Asst. Sec. and Asst. Advertising Manager*)
Mr. W. G. POWELL.
Mr. A. J. S. GREENFIELD.

•

Correspondents:

Dr. F. A. BRANDT, Mr. H. FLEETWOOD-HOWARD, Mr. M. H. LELLO, Mr. J. H. MAYTHAM, Mr. D. W. PLAMPIN.

Printed by Provincial Printing Co. (Pty.) Ltd., 482 Smith Street, Durban, and published by the Society of Medical Laboratory Technologists of South Africa, c/o Central Pathological Laboratory, Private Bag, Jacobs, Natal.



The South African Journal
of
Medical Laboratory Technology

ORGAN OF THE SOCIETY OF MEDICAL LABORATORY TECHNOLOGISTS OF SOUTH AFRICA

Vol. 2, No. 2 A QUARTERLY June, 1956

CONTENTS

REDAKSIONEEL

DIE TYD FAKTOR IN DIE ROETIENE LABORATORIUM

In die vorige uitgawe van die Joernaal, het ons 'n artikel vertoon wat nadruk lê op die belangrikheid vir Mediese Tegnoloë om 'n gees van nuuskierigheid in die wetenskap te ontwikkel, deur op hoogte te bly met lopende ontwikkelinge in die omvang van hulle werk en 'n wakker en verstandige toenadering tot hulle onderwerpe te behou.

Ons stem heeltemal saam met die auteur van die artikel. Dit word te dikwels gevind dat 'n Mediese Tegnoloog se verstand in 'n groef beland waar die roetiene werk meganies gedoen word en niks meer nie. Eerstens blyk die houding onvergeeflik te wees, omdat in meeste laboratoriums met uitsondering van die allerbesigste, daar gewoonlik redelike vry periode gedurende die dag geskied, waarin daar genoeg tyd beskikbaar is vir die lees van opbouende literatuur of navorsings in laboratoriumswerk. Maar dit is selde dat sulke vry periode op die wyse, van gebruik gemaak word.

Miskien lê die vout nie alleenlik by die Mediese Tegnoloog nie. Ons roetiene werk kom natuurlik eerste en die vereiste is dat monsters wat na die laboratoriums gestuur word dadelik moet gedoen word. Die monsters kom gewoonlik in klompe wat dan 'n groot bedrywigheid veroorsaak maar dan kom daar 'n tussen periode waar net een of twee monsters op 'n slag inkom, met die gevolg dat wanneer ons miskien diep belangstellend met 'n stukkie navorsing besig is, moet ons dit los om 'n enkele monster te gaan ondersoek.

Daar is nie veel wat ons kan doen in verband met die aard van ons werk nie. Maar as ons baie ingenome raak met 'n probleem gedurende die laksperiode dan sal die aankom van so 'n enkele monster, 'n gevoel van teleurstelling veroorsaak. Dan sal daar uiteindelik, selfs by die indiwidu met 'n sterk wilskrag, moontlik 'n gevoel ontwikkel dat enige werk behalwe die roetiene ondersoek nie die moeite werd is om aan te pak nie en sodoende teleurstellings te voorkom. So vind ons gewoonlik dat daar groepe persone bymekaar kom om te gesels maar niks opbouend doen om die tyd te verdryf nie. Ons vind dikwels dat sulke persone dan hulle eie departemente verwaarloos en net een pligsgetroue persoon, wat probeer om 'n bietjie tyd aan opbouende literatuur te bestee, in die laboratorium te laat om dan ook met die enkele monsters wat inkom te werk. Wanneer dit 'n gewoonte word om met sulke tussen periodes leeg te lê, dan is dit onwaarskynlik dat tegnoloë die tyd in die aand sal herwin.

Daar is sommige wat hulle houding probeer regverdig deur te argumenteer teenoor hulle self „ Wat maak dit saak as ek niks doen wanneer daar nie veel routiene werk te doen is nie? Ek verdien my loon. Wanneer die monsters daar is werk ek hard, en ek is altyd gewillig om na ure te werk en selfs ook gedurende etensure, wanneer nodig." Maar as ons wil eerlik wees teenoor onsself dan is die argument onoortuigend. Iets moet gedoen word.

Die antwoord is duidelik. Ons stel voor dat in laboratoriums waar laksperiode voorkom, 'n onoffisiele rotasie stelsel in werking gebring word, waar tegnoloë beurte neem om enkele monsters wat inkom te doen en so doende dan ander lede van die staf vry te stel om navorsingswerk te doen of opbouende literatuur te lees, totdat die volgende klomp monsters dit nodig maak vir almal om hand by te sit.

Studente sal seker leiding nodig hê, van hulle seniors, in die kose van gepaste literatuur. Die seniors kan ook probleme uitwys waar verdere ondersoek en eksperimente kan gedoen word. Seniors wat privaat navorsings onderneem, sal ook die hulp van patoloë nodig vind. Die belangrikste punt is dat die tegnoloog van tyd tot tyd verseker sal wees van 'n tydperk, miskien net 'n half-uur, waarin hy vry sal wees van aanhoudende onderbrekings, om navorsing, ens., te doen. Die tyd moet dan ook die agting van die ander lede van die staf geniet.

EDITORIAL

THE TIME FACTOR IN THE ROUTINE LABORATORY

In the previous issue of the Journal, we featured an article which stressed the importance of a Medical Technologist's cultivating a spirit of scientific curiosity, keeping up-to-date with current developments in his sphere of work, and maintaining an alert and intelligent approach to his subject.

We thoroughly agree with the author of that article. Too often it seems that Medical Technologists descend into a mental rut, performing their routine duties mechanically, and doing nothing more. At first sight this attitude seems inexcusable, because, in most routine laboratories except the very busiest, there are usually some fairly slack periods during the day, in which, even during working hours, one might think there is ample opportunity for constructive reading, or the private investigation of interesting sidelines of laboratory work. But how often are these periods utilised to the full?

Perhaps the fault does not entirely lie with the Medical Technologist. Our routine work, of course, comes first; and the nature of our work is such that most specimens sent to the laboratory must be investigated immediately. The specimens usually arrive in batches, necessitating periods of concentrated activity, but in slack periods they still arrive—in ones and twos. And invariably, just as we are getting deeply interested in our fascinating sideline, we have to leave everything to attend to a single specimen.

There is not much we can do about the nature of our work. But, if we become really interested in a " slack-period " activity, the advent of our isolated specimen is bound to cause a certain sense of frustration. And, even in the most strong-minded individual, there is probably an ultimate development of an unconscious tendency to prevent this frustration by not getting too interested in anything—apart from routine examinations. And so, at slack times, inactivity reaches the point where a degree of competition for available work arises; or, more probably, one finds a group of gossips who have neglected their own departments, leaving a single conscientious person who is trying to do some constructive reading to deal with any specimens that may arrive. And once the habit of spasmodic idleness during working hours has been developed, it seems unlikely that technologists will regain lost time in the evenings.

There are some who may try to justify their attitude by arguing to themselves " What does it matter what I do when there isn't much routine work? I earn my pay. When the specimens are there, I work hard; and I am always willing to work after hours, or during the lunch break, when necessary." But, if we are honest with ourselves, we find this argument unconvincing. Something needs to be done.

The answer should be obvious. We suggest that in laboratories where slack periods occur, an unofficial rota system should be established, whereby technologists take it in turns to constitute a skeleton staff to deal with all isolated incoming specimens, leaving the other staff members free to pursue their own interests until the next large batch of specimens once more necessitates " all hands to the pump." Students will probably need some guidance in their choice of literature from their seniors, who may also indicate laboratory problems requiring further investigation and experiment to those who are interested. And seniors who may undertake some private research will need the help of pathologists. But the important thing is that the technologist will be periodically assured of a certain amount of time, even if it is only half an hour, in which he is free from continual minor interruptions. And this time should be treated with respect by the rest of the staff.

THE BACTERIOLOGICAL EXAMINATION OF MATERIAL FOR MYCOBACTERIUM TUBERCULOSIS

D. W. PLAMPIN

Dr. Blaine's Laboratory, Salisbury, Southern Rhodesia

Tubercle bacilli are capable of attacking and altering nearly all the tissues of the body. We have, therefore, a wide range of potential material for possible examination including secretions, excretions, body fluids or tissue from a suspected tuberculous patient.

In the collection of material, acid- and alcohol-fast bacilli may be introduced, which do not come from the patient, or are not actually *M. tuberculosis*. The ward instruments such as catheters, Ryle's tubes, bronchoscopy tubes, etc., must be free from old *M. tuberculosis* and also acid- and often alcohol-fast saprophytic organisms. Although 70% alcohol for 10 minutes will kill these bacilli, it may also be harmful to the apparatus used; in dissolving the cement holding the lens in place in a cytoscope, for example. A proprietary brand chemical disinfectant named " Amphyl " in 1% concentration and applied for 30 minutes has been found satisfactory for use with such apparatus.

Acid-fast bacilli, although killed during heat treatment, may remain on the sides of the jars or bottles used for reception of the specimens. These will still retain typical acid- and alcohol-fast properties even though dead.

Slides used for examination of material for *M. tuberculosis* should not be reused after cleaning as old bacilli may remain and cause confusion in later tests. It is much safer and not very wasteful to use a new slide for each stained preparation. These slides need not be of the best quality and need not have ground edges; and, when time and cleaning materials are taken into consideration, cost very little, and have the advantage of freedom from old bacilli.

Bottles and jars should be subjected to an even more rigorous technique than that usually used for bacteriological glassware. The cleaning fluid usually used consists of 50 gm. of potassium dichromate in 1,000 ml. of concentrated sulphuric acid in which immersion for 12 hours is sufficient to destroy *M. tuberculosis* and also acid- and sometimes alcohol-fast saprophytes.

It is quite impossible to differentiate, in many instances, between *M. tuberculosis* and some acid-fast saprophytic organisms in a direct stained preparation. Far too great importance is often attached to the finding of typical acid- and alcohol-fast bacilli in suspected material by direct staining techniques and with perhaps one exception it is not

justifiable to label a patient as a tuberculotic on this evidence alone. Cultural techniques and perhaps animal tests should always be employed for confirmation. The exception, of course, is in a case of suspected tuberculous meningitis when the finding in the cerebro-spinal fluid of one or more typical acid- and alcohol-fast bacilli together with the typical clinical symptoms in the patient is sufficient for diagnosis. We must then be absolutely certain that we have not introduced into our preparation any of the above sources of error. For if we have found acid- and alcohol-fast saprophytic organisms and reported them (as they often are) as "acid- and alcohol-fast bacilli morphologically resembling *M. tuberculosis*", it is likely that the patient's true condition may be masked by antibiotics; the proportions of chemical constituents of subsequent samples of the cerebro-spinal fluid may have altered; the antibiotics may have produced harmful effects on the patient; and, lastly, we may cause the patient to suffer considerable unnecessary expense.

The acid-fast, saprophytic group of organisms, it is interesting to note, may have the power, under experimental conditions, of causing lesions in mammals simulating those caused by *M. tuberculosis*, but without causing progressive disease.

DIRECT EXAMINATION

It is essential that a well-prepared slide be made. The material should be evently and gently spread because harsh treatment may cause the disruption of the cytoplasmic membrane of *M. tuberculosis* with the release of its unsaponifiable wax and so allow the bacillus to lose its acid- and alcohol-fast properties. Conversely, the material for examination should on no account come in contact with oil or wax prior to staining because if this happens non-acid- and alcohol-fast bacilli will become acid- and alcohol-fast.

STAINING TECHNIQUES

The most popular and most widely used staining technique is the Ziehl-Neelson method. The only modification of the original technique that I find beneficial is the use of a very weak (0.05%) solution of malachite green in place of the methylene blue solution. It is possible to alter the temperature of the staining reaction and also alter the length of time the stain is in contact with the material but nothing is gained by these means. If the stain is allowed to boil, precipitation will take place and the preparation rendered useless.

The use of staining troughs in any part of the Ziehl-Neelson technique is to be thoroughly condemned. It is easily proved that transference does take place and it is thought that most erroneous positives in this method have been due to this cause. To emphasise this point a little more, it has been proved that even using the usual staining-rack technique transference will take place during the washing stage unless the slides are placed on the rack at least 3 inches apart in both directions.

After every Ziehl-Neelson stained film has been examined, and especially following the examination of positive specimens, the oil-immersion lens should be thoroughly cleaned as the acid-fast and alcohol-fast bacilli often become detached from the slide and may be transferred to the next slide for examination.

A further modification of the direct examination of material stained by the Ziehl-Neelson technique utilises the incorporation of a blue-green filter in the microscopical apparatus. A Wrattan H 45 filter is usually employed and this blots out practically all the background leaving the acid- and alcohol-fast bacilli appearing as intense black bacilli. With a suitable filter housing, it is a simple matter to remove the filter to obtain the typical Ziehl-Neelson stained appearance. This method has the advantage of the ease with which the bacilli may be found, (the use of the x45 fluorite oil-immersion lens, with the advantage of a large field, is adequate); and of confirmation being immediately at hand by the removal of the filter.

In view of the fact that transition takes place between a positive and negative direct examination when there are between 10,000 and 50,000 bacilli per ml. of specimen (Cruickshank, 1951) and that *M. tuberculosis* organisms are never evenly distributed throughout the specimen, it is probably more advantageous to spend two minutes looking at each of five preparations of the material than to spend 15 minutes examining one slide from the same material.

Fluorescence microscopy has been and is being used on a large scale for the direct examination of suspected material. The contrast obtained is such that a high power dry lens may be used. There are disadvantages with this method. It is not specific in that all the acid- and alcohol-fast saprophytic organisms fluoresce to a greater or lesser degree, (with the exception of the Smegma bacillus which does not fluoresce), depending on the amount of unsaponifiable wax contained in the organism. Also, special apparatus is required and if perchance anything goes wrong with the system of filters employed, damage may occur to the observer's eyes by the entrance of ultra-violet rays.

HOMOGENISING AND LIQUEFACTION TECHNIQUES

There are many of these techniques in use to-day and to judge them we must understand the reasons for their use. They are used in killing organisms other than *M. tuberculosis* in material such as sputa, and in breaking down viscid material and releasing and concentrating *M. tuberculosis* organisms. However, whilst doing this, they must leave the tubercle bacilli relatively unharmed.

Earlier workers used the Antiformin technique. Antiformin consists of equal parts of 15% NaOH and Liquor Sodi Chlorinatae. The advantage of this method was its efficiency in killing the secondary organisms and breaking down the material. Unfortunately, however, it was inclined to be lethal for *M. tuberculosis* itself.

Later, much weaker concentrations of NaOH were used as in Petroff's technique. Petroff's method seems to be most suited for routine specimens as was shown in the U.K. and the U.S.A. in trials of comparison against other homogenising and liquefying agents. It is a simple method, and, provided that due regard is paid to technique, is almost as efficient as the Antiformin technique in its homogenising action and lethal activity for secondary organisms whilst leaving *M. tuberculosis* reasonably unharmed.

Jungmann's method, a liquefaction technique, has the disadvantage that the washing solutions used, sodium citrate and sodium lactate, are prone to contamination. The method is less concentrating than the NaOH method and the literature is confusing on the concentration of hydrogen peroxide used. This may have contributed to poor results with this method.

Tri-sodium phosphate is very useful when " postal-pathology " is used. Its homogenising and lethal activity is slow.

Some technical points about Petroff's method that should be borne in mind are:—

(1) The incubation and agitation period together should not exceed 30 minutes. In fact, if the specimen is completely homogenised at 15 minutes it is safe to proceed and not wait for the full period.

(2) Centrifuging should be at 3,000 r.p.m. for 5 minutes, and not, as so often stated, 30 minutes. Nothing is gained by prolonged centrifuging, as in many cases the *M. tuberculosis* organisms have a lower S.G. than the suspending homogenising agent. This can be simply overcome by the addition of a few drops of chloroform to the mixture. If longer centrifuging takes place, the heat produced at 3,000 r.p.m. in alliance with the prolonged contact with the NaOH solution tends to kill the *M. tuberculosis* organisms.

(3) Neutralisation should be carried out carefully as pH values outside the range 7.0 to 7.5 tend to inhibit the organism's growth.

(4) The reagents used in the technique must be free from contaminating acid-fast bacilli.

(5) If the specimen is not contaminated with secondary organisms and is non-viscid, (e.g. pleural fluid from primary serous pleural effusions), it is unnecessary and inadvisable to use homogenising techniques.

To illustrate points (3) and (4) above I shall describe two personal experiences. At the laboratory in which I was working at the time, over 12,000 specimens were examined annually for *M. tuberculosis* by the culture technique. The average percentage of true positive results obtained was in the region of 20%, allowing for the naturally occurring slight drop twice yearly which occurs in all laboratories in the U.K. One month the number of positive results obtained fell to 3%. The usual number of positive direct smears on these specimens had been previously obtained. It was noted that all the specimens giving "positive-direct" and negative culture results had been inoculated on to Löwenstein Jensens slopes which, after incubation, appeared to be much bluer than usual. The pH of these slopes which appeared to be so blue was then tested. In all cases, it was found to be in the region of 9.8 to 10.4. Fresh Löwenstein-Jensen slopes of the same batch number were then inoculated with distilled water of pH 7.0 and the slopes again changed colour from pale green to deep royal blue. The matter was then taken up with the suppliers of the medium and it was eventually proved that bottles had been used which were giving off free alkali which penetrated the medium after the introduction of the fluid neutralised deposits and so prevented the growth of *M. tuberculosis.*

An opposite example of what can happen is shown by the fact that on another occasion the percentage of Löwenstein-Jensen slopes on which growth of acid- and alcohol-fast bacilli of typical stained morphology were obtained rose to 90%. The colonial appearance was not typical. The colonies were more pigmented than *M. tuberculosis* colonies and much more easily emulsifiable. They did not appear, however, until the slopes had been incubated at 37° C. for five weeks. No growth was obtainable on serum agar slopes at room temperature although the organisms did grow at 37° C. on this medium at five weeks. It was obvious that contamination with these organisms was taking place at some stage of the technique. After much experimenting it was proved that they originated in the phenol red solution used in the neutralisation procedure.

These two experiences do show the need for constant vigilance and accurate recording on the part of the technician, not only in regard to the culture of *M. tuberculosis* but in all branches of laboratory technique.

CULTURE METHODS

The main media in use today are Löwenstein-Jensen, Dorset's egg and Dubos. Slide-culture methods are also used.

Löwenstein-Jensen and Dorset's egg media are probably the most useful, especially for primary cultures. Colonial appearances on these media are typical, and they are best used in combination when one appreciates the fact (Cruikshank, 1951) that 25% of all varieties of *M. tuberculosis* in man, other than those of pulmonary origin, are bovine

in type; and for the recognition of the bovine variety of *M. tuberculosis* a medium which does not contain glycerol such as Dorset's egg medium should be used. Generally speaking, the human variety of *M. tuberculosis* produces a quicker and more luxuriant growth than does the bovine type, on all media. The bovine type grows better on a medium that does not contain glycerol, although not as well as the human type. For full identification many media need to be inoculated and animal experiments performed and these may take three to four months.

Dubos medium (Dubos and Middlebrook, 1947) was introduced in an attempt to speed up the growth-time factor of *M. tuberculosis* in an artificial medium. The method is successful in this respect but it has the disadvantage of being more use as a secondary medium because it lacks the specificity of the Löwenstein-Jensen medium, and acid- and alcohol-fast organisms of the saprophytic group will give growth that is almost impossible to differentiate from that of *M. tuberculosis*. For instance, the organisms isolated in the phenol red episode mentioned earlier would probably have been thought to be *M. tuberculosis*.

The same remarks apply to the slide-culture method (Pryce, 1941). For sensitivity testing, however, this method is extremely useful, giving rapid results.

MATERIAL

Sputum. It is important that a real specimen of sputum is used for the examination and not one that consists mainly of saliva. Early morning expectorations are usually suitable. By selection of material from the sputum, (picking out the greyish-white flecks,) a considerable increase of positive results may be obtained compared with using unselected material. It must also be remembered that sputum that has stood for 24 hours or more will probably contain very large numbers of acid- and perhaps alcohol-fast bacilli which may confuse the issue.

Resting gastric juice. This material must be neutralised as soon as possible after removal from the patient and certainly not later than three hours afterwards. The acidity and enzyme action of the gastric juice is harmful to *M. tuberculosis*. The direct-stained preparation is useless on this material and contaminating acid- and alcohol-fast saprophytes are almost always present. Cultures must be made from the neutralised homogenised deposit. It is very difficult to remove old acid- and alcohol-fast bacilli from the Ryle's tubes used in the withdrawal of the juice. Some authorities say that a new tube must be used for each specimen (Pryce, 1941).

Cerebrospinal fluid. With good technique which concentrates the deposit from this material into as small an area as possible on to the usual glass slide, 95% of material from true cases of tuberculous meningitis will yield positive results. Due care must be taken with the conditions mentioned earlier.

Pleural fluid. The larger the amount of fluid received for examination, the greater the chance one has of finding *M. tuberculosis.* Older methods concentrated the whole of the specimen by centrifuging and Löwenstein-Jensen slopes were then inoculated. With this method, Eberle (1949) found that colonies could be obtained of *M. tuberculosis* in 95% of diagnostic aspirations in cases of primary serous pleural effusion provided that the specimen consisted of 10 ounces or more. Close (1946), using the method of dividing as much of the material as possible into 10 ml. amounts and then culturing the clots, obtained almost similar results. The latest method, using a "gradocol" or collodion membrane filter will probably yield even better results, as, theoretically, no bacilli will be lost.

Homogenisation must be used for pus, faeces, and 24-hour specimens of urine. Preferably, early-morning catheter specimens are used which, when properly taken, require no treatment.

Finally, a word about laboratory infection with *M. tuberculosis.* It is obvious that the strictest aseptic precautions must be taken when dealing with tuberculous material, as indeed with any infected material. When dealing with cultures of *M. tuberculosis* especially, great care must be taken; as, for instance, if a loop carrying part of a colony is thrust into the hottest part of the flame, bacilli may be distributed around the laboratory in large numbers. Danger will be present, not only for the technician performing these duties, but also for many of his or her fellow-workers. It has been said that small infections over a period of time in workers such as laboratory technicians, nurses, students, etc., will eventually confer an immunity on the worker. This may not be sufficient when receiving such a large dose of viable bacilli as described.

I know of one instance where a young laboratory worker received such an infection; mainly, it was thought, because she would still engage in the habit of sucking her thumb. This, and the fact that the candle was being burnt at both ends, resulted in decreased resistance.

Laboratory workers should, on admission to the laboratory, be subjected to a tuberculin test and a radiological examination of the chest. Every three months these procedures should be repeated, especially in the case of a tuberculin negative person. B.C.G. vaccination should be offered to tuberculin negative persons, so that, if contracted, the disease may be recognised at the earliest possible moment.

The worker mentioned above was diagnosed on the routine described, and, although the process was developing at an alarming rate, in that differences were seen in X-rays of chest taken at two-day intervals, she is now back at the laboratory bench and is not sucking her thumb!

REFERENCES

CLOSE, H. G. (1946). *Lancet*, 193.

CRUIKSHANK, D. B. (1951). *Recent Advances in Clinical Pathology*, 2nd Ed., 35. Ed.—S. C. Dyke. Churchill, London.

CRUIKSHANK, D. B. (1951a). *Recent Advances in Clinical Pathology*, 2nd Ed., 44. Ed.—S. C. Dyke. Churchill, London.

DUBOS, R. J. and MIDDLEBROOK, G. (1947). *Amer. Rev. Tuberculosis* **56**, 334.

EBERLE, A. J. F. (1949). *Tubercle* **30**, 150.

PRYCE, D. M. (1941). *J. Path. Bact.*, **53**, 327.

American Trudeau Society. Diagnostic Standards. (1950). National Tuberculosis Association, New York.

Monthly Bulletin of Public Health Laboratory Service Working Party (Aug., 1952). **2**, Ministry of Health and Public Health Laboratory Service, U.K.

ACKNOWLEDGMENT

I wish to thank Dr. G. V. Blaine for permission to publish this article.

A SIMPLE METHOD FOR THE CULTURE OF FUNGI ON MICROSCOPE SLIDES

M. H. LELLO

Edendale Hospital, Pietermaritzburg

The advantage of culturing fungi on microscope slides is the facility provided for the study of aerial growth, as an aid to the identification of fungi. The " hanging-drop " method may be found in most laboratories, but this method has several disadvantages in that hollow-ground slides are required and much time is consumed in " ringing " the depression with " Vaseline " to provide support for the coverglass. Furthermore, the medium soon becomes exhausted and growth is slowed down until it finally ceases.

The following method has been devised to overcome these disadvantages and to be both efficient and quick.

MATERIALS REQUIRED

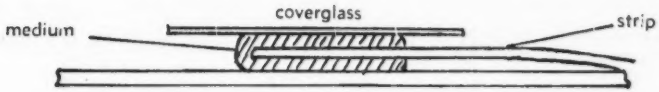
1. *Microscope slides.*
2. *Coverglasses.*
3. " *Celluloid* " *strips* approximately 1 cm. wide by 10 cm. long. These can be made from scrap X-ray film from which the emulsion has been removed.
4. *Culture media.* Sabouraud's agar, Nickerson's medium or whatever agar media are required.

METHOD

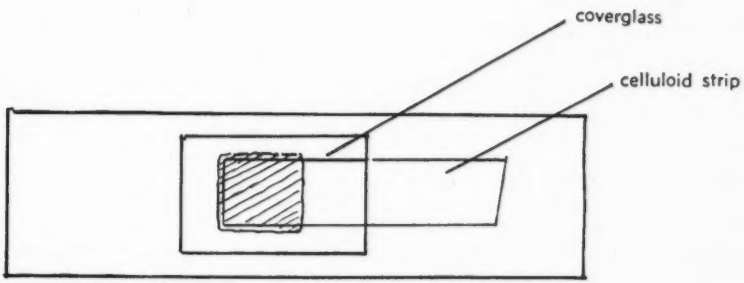
The slides and coverglasses may be sterilised in a hot-air oven or by passing several times through a Bunsen flame. The " celluloid " strips are sterilised by immersing in ether for several minutes and allowing

to dry in sterile test tubes. Gentle warming of the tubes in the 37° C. incubator will remove the last traces of ether. 10 ml. of the agar in a MacCartney bottle are melted in a water bath and allowed to cool to 40-50° C. The strips are removed one at a time from the test tube with a pair of forceps and dipped into the melted medium to a depth of about 1 cm. The strip is removed and the excess medium removed by touching the strip against the inside of the neck of the bottle. As soon as the film of medium has solidified the process is repeated, and may be repeated again until the thickness of the end of the strip is about 0.5 mm. The medium is now inoculated with fungus, either by touching the end with a loopful of culture or by allowing the end of the strip to touch a colony of the fungus.

The inoculated strip is now laid flat on a sterile slide and the excess " celluloid " removed by cutting off about 8 cm. with a pair of scissors. This leaves a strip approximately 2 cm. long, half of which is covered with the inoculated medium. A sterile coverglass is now placed over the preparation and gently pressed down to remove air bubbles between



Lateral View of Apparatus



Surface View of Apparatus

FIGURE 1

the medium and the coverglass. The coverglass should be centred over the medium and the portion of the strip without medium allowed to protrude from beneath the coverglass. The preparation is now incubated in a moist Petri dish. Should the medium begin to dry out or appear

to be becoming exhausted, it may be rejuvenated by allowing a small drop of carbohydrate-peptone water to flow from a sterile Pasteur pipette, under the exposed " celluloid " strip, where it will flow by capillary attraction to the medium. The culture may thus be kept for a long period without disturbance. The preparation is shown diagramatically in Fig. 1.

The advantages of this method are as follows:—

(1) Standard equipment is used and the preparations are easy to prepare.
(2) A large number of cultures may be prepared from one bottle of medium, thus eliminating waste.
(3) The medium may be rejuvenated without disturbing the culture, thus allowing the preparation to be maintained for long periods.
(4) A thin, flat preparation is made allowing full use of both the low- and high-power objectives of the microscope.
(5) Preparation of the culture consumes very little time.

INTRODUCTION TO MEDICAL PHOTOGRAPHY

C. R. STUART

Department of Pathology, Faculty of Medicine, University of Natal, Durban

First and foremost, the medical photographer should have an interest in medicine; unless this interest is present he would find difficulty in showing the condition that the doctor wishes to describe to full advantage.

Medical photography requires a very different technique from most other types of photography, and unless the photographer becomes familiar with the terms and expressions used by doctors and the conditions and physical signs which characterise the various diseases, he will find himself photographing parts of the patient's anatomy or portions of the specimen which have no connection whatever with the disease in question and probably turn out to be one of the few quite normal areas left. To illustrate: A rather nice looking probationer nurse arrived at a photographic department with a patient and a request form. The form stated cryptically " Herpes Zoster ". Somewhere in the mind of the photographer he remembered having photographed a patient about a month previously (his first medical photograph) with a disease which bore a similar name. Also being rather impressed with the nurse and wishing to appear knowledgeable, he proceeded to photograph the patient's feet. Both the patient and nurse looked rather staggered but that did not deter him. The results were sent to the doctor who requested the photograph and it was checked by one of his many housemen who informed his chief that the photograph was a fine one. He was instructed to enclose it with the paper and send it off.

The article duly appeared in one of the medical journals. The photographer was requested to go and see Dr. . . . As it was the first photograph he had taken that was destined for publication, he went feeling that he deserved all the 'credit' that was coming to him. He knocked at Dr. . . .'s door, was admitted and immediately learned a number of expressions and terms that were certainly not medical in origin. He returned to his department, full of indignation, found the request form and the previous request and took them back to the doctor. He learned that " Herpes Zoster " is a skin infection and " Hallux Valgus " was commonly known as bunions. He was also requested to photograph another case of " Hallux Valgus " . . . his head. *The medical photographer should have a good knowledge of medical terms and expressions.*

The medical photograph should be clear, sharp and must be an accurate representation of the condition as presented. There should be no attempt to make a thing of beauty out of an ingrowing toenail. A true representation is all that is required.

The photographic department should be equipped with the finest apparatus that can be afforded by the institute concerned. There is no doubt that one can make do with cheap and usually unsuitable equipment but the results will lack the clarity and sparkle that a good lens and camera can give. As the department will be called upon to produce many different types of photographs, the camera should be versatile. It is possible, provided the institute has sufficient funds, to use various kinds of cameras. I personally deplore the idea of marching around the hospital looking like a cross between an . . . tourist and a camel. At the most two cameras are desirable—a $2\frac{1}{2}$ x $3\frac{1}{2}$ plate camera for studio and black and white photography and a 35 mm. camera for colour positives and negatives. The latter should have interchangeable lenses and a reflex focussing system and can be used for photomicrography and photomacrography. I have used this combination for some years to my satisfaction. An electronic flash is also a most useful item of equipment. It is portable and excludes the necessity of carrying around banks of lights, besides which it is economical and can be used with either colour or black and white film. The light colour value emitted by this type of flash approximates daylight.

The darkroom should be spacious, well ventilated (in hot climates it should be air-conditioned) and well safe-lighted. The darkroom equipment should consist of a good $2\frac{1}{2}$ x $3\frac{1}{2}$ enlarger, a glazer/dryer and the usual darkroom requirements. The enlarger would cover both camera sizes and most of those negatives that people bring one for enlarging, etc.

THERE ARE A NUMBER OF IMPORTANT RULES TO BE REMEMBERED . . .

When dealing with patients:

1. The medical photographer should practise a pleasant bedside manner so that patients can feel completely at ease in his presence. In this way the co-operation of patients can be encouraged. There is

little advantage in trying to give the patient the impression that an X-ray is being taken, when quite obviously the camera and lights prove this to be incorrect, since this generally creates a feeling of distrust towards one and the patient will probably react unfavourably.

2. When photographing a female patient, it is advisable to have either a nurse or female assistant in attendance.

When in the operating theatre:

1. Ascertain what type of anaesthetic is being used. Should it be ether or some other inflammable material, check lights, etc. for any loose connections which may cause a spark.

2. Keep out of everyone's way until called forward.

3. Take up a position decisively and ask for anything that is needed.

4. Take the photograph as quickly as possible but ensure that you *do* get it.

5. Follow rigid aseptic formalities throughout.

When on the ward:

1. Approach the ward Sister to find out whether or not it is convenient to view the patient so as to ascertain what equipment and material is necessary.

2. Make an appointment with the ward Sister for a convenient time to take the photograph.

3. Take the photograph with a minimum of fuss and bother.

When in the mortuary:

1. It is wise to keep the equipment out of the way of splashes, etc., (no offence meant)!

2. Take the photograph and leave as soon as possible afterwards. If the body is a few days old, one will follow this rule without being reminded!

TO SUMMARIZE.

Medical photography is a fascinating profession. One sees and follows through most of the rare and interesting cases that come to the hospital. The physician or surgeon in charge is usually quite helpful and will explain the various conditions and physical signs. The job, being an ambulant one, will enable one to meet the people in the hospital.

Above all the satisfaction of producing a good, accurate series of photographs illustrating what might well prove to be a rare disease, is very gratifying. The results of one's work could well be seen by the medical profession and medical photographers throughout the world and one can soon enter into correspondence with many people from numerous countries.

From personal experience, I would say that this is a most worthwhile profession.

FAT INTAKE AND CORONARY THROMBOSIS

(Synopsis of a lecture given by Dr. S. M. Joubert, of the Central Pathological Laboratory, Wentworth, to the Natal Branch of the Society on 19th January, 1956)

Dr. Joubert commenced his talk by drawing attention to the fact that heart disease is to-day the commonest cause of death in civilised countries. Studies have shown, further, that approximately one half of all cardiac deaths are directly due to coronary heart disease.

This has not always been the case. At one time rheumatic heart disease occupied a dominant place on the list, but within a comparatively short space of time it has been superseded by the coronary disease. The incidence of the latter has increased by leaps and bounds.

To illustrate this point Dr. Joubert made reference to early research work, undertaken with the aid of the electro-cardiograph, by Dr. Gilchrist of Edinburgh University in the 1920's. In three years, Dr. Gilchrist came upon only 22 cases of coronary heart disease. Its early rarity could not, said Dr. Joubert, reasonably be attributed to lack of observance on the part of the physicians of the time. The symptoms were too characteristic and obvious for that.

With the passage of time the disease has been attacking younger and younger age groups, and in the United States army, according to statistics, it has been shown to be not uncommon at the age of 30 and younger.

The problem now confronting us was to find some reason for the prevalence of the disease. Before dealing with the research into this problem our lecturer outlined briefly the immediate causes of coronary thrombosis. The first stage is the development of an atheromatous lesion of the coronary arteries. The lesions form plaques containing cholesterol, situated subintimally and frequently at points of bifurcation. When the overlying intima is damaged, clot formation takes place, resulting in occlusion of the artery to varying degrees.

Dealing with cholesterol, Dr. Joubert drew attention to its occurrence in the edible fats. Fats consist largely of glyceride esters of long-chain fatty acids, cholesterol, a small percentage of soaps, and the phospholipids cephalin, lecithin and sphingomyelin. These facts led research workers to suspect that an excessive consumption of cholesterol might promote the disease, and experiments were performed on rabbits. Variation in the amounts of cholesterol fed to the rabbits produced corresponding variation in the cholesterol concentrations in the blood. A rise in concentration was found to be associated with the formation of atheromatous plaques. Accordingly, it was thought that foods rich in cholesterol such as eggs, fish and fish products should be eliminated from the human diet as far as possible. However, it has been shown that the same mechanism does not apply to man. Variation in cholesterol intake does not affect the blood concentration.

Efforts were made to establish some relationship between the blood cholesterol concentration itself, and coronary thrombosis, but the statistical correlation is poor. Studies of cholesterol, cholesterol ester and cholesterol-phospholipid ratios yielded no consistent information of diagnostic or prognostic value.

In recent times, Keys noted the important fact in large populations that the higher the percentage of calories derived from fat in a diet, the higher was the incidence of coronary disease among those living on that diet. This has been found to apply more specifically where the calorific contribution of the fat in the diet exceeds 40%.

Another interesting fact emerging from statistics is that males in the younger age groups are more vulnerable to the disease than females in the same age groups. However, among older persons the incidence is approximately equal for males and females. These facts may lead us to suspect that the sex hormones have some influence in the pathogenesis of coronary thrombosis. The fact that women on the whole eat less and study their diet more than men may have some bearing on the facts revealed by the statistics. It is an interesting point that in Japan the incidence of coronary thrombosis in males is lower than the incidence in premenopausal American women. In Japan only some 8% of the calorific intake is derived from fats.

Our lecturer went on to describe how, in 1950, J. Gofman and his associates carried out research work in the United States on the fats carried in the blood stream. They proceeded on the assumption that the various lipids in the blood were combined with proteins in giant molecules, forming so-called lipoproteins. Numerous fractions can be identified ultracentrifugally. Gofman claimed definite relationship between one of these and the incidence of coronary thrombosis.

Before concluding his talk Dr. Joubert criticised some popular beliefs about coronary thrombosis and mentioned several facts of general interest on the subject.

It is a general rule, he said, that the higher the standard of living, the higher the amount of fat included in the diet, and the higher the incidence of the disease. Virtually all palatable food contains fat. Sugar is a fat-free food but when taken in a palatable form (e.g. chocolate) we usually combine it with substances containing fat. As might be expected, fat consumption in the United States has increased appreciably within a short space of time. In the Union, Europeans consume a diet in which 40% or more of the calories are derived from fat; Africans—only about 8%. Coronary thrombosis is virtually unknown amongst Africans.

At present, it appears that studies on the sources and types of fat and their relationship to coronary heart disease will be fruitful.

There is a tendency to blame the increased incidence of coronary thrombosis on the strain of modern living. Nobody can measure strain, but if the living conditions of the past are carefully considered and compared with those of the present, one wonders whether we are really subjected to added strain in this 20th Century. The smoking habit, also, has not escaped suspicion, but here again the evidence is very doubtful.

Considering the incidence of the disease among the professions, it has been shown that members of the medical profession are the most prone to attack, and those of the clerical profession the least.

At the conclusion of his talk, Dr. Joubert answered members' questions and was thanked on behalf of the Branch by Mr. G. W. Wikeley.

A.J.S.G.

THE STORY OF THE CARL ZEISS ORGANISATION

(*Synopsis of a talk given by Mr. T. Steeg of Optical Instruments (Pty.) Ltd. to the Natal Branch of the Society on 9th February*, 1956)

Owing to sudden illness, Mr. Meier was regrettably unable to give his lecture on microscopy in general, as originally planned. We are much indebted to Mr. Steeg who took his place, and gave us a most interesting talk on the Carl Zeiss organisation.

Mr. Steeg commenced his talk by describing how approximately 100 years ago, Carl Zeiss, a mechanic by trade, went into business on his own and started to manufacture simple microscopes. Meeting with some success, and desiring to expand the business, he felt it necessary to enlist the aid of some person with a knowledge of science. Accordingly he approached the scientist Ernst Abbe, who joined him and turned his attention to the development of new microscope objectives.

They were considerably hampered in the improvement of their instruments by the poor quality of optical glass available, and this difficulty was not overcome until they entered into a combine with Doctor Schott, owner of the Schott Glass Works in Jena.

Carl Zeiss died in 1880, the number of employees in the organisation having increased by then to more than 2,000. Ernst Abbe, who took over, conceived the idea of forming a trust fund, with the workers as shareholders (the Carl Zeiss Foundation). Directors were nominated for life, and were not allowed to receive any dividends. Regulations were laid down regarding the rights of the workers, which seemed at that time revolutionary.

Dealing with the post-war years, Mr. Steeg said that although Jena, the Zeiss headquarters, was occupied by United States forces, it was

later handed over to Russia when the partition of Germany was settled. Shortly before the Russian occupation (late in 1945) the scientists employed at the factory were evacuated with their families to the Western zones, and in time another factory was set up at Heidenheim. Since then other factories of the organisation have been built, and many refugees who later fled from Jena are employed there. The number of employees at present is approximately 4,500. The Russians attempted to remove much of the valuable equipment of the Jena factory to the Soviet Union, but there is reason to believe that half of it never reached its destination.

Mr. Steeg went on to explain some of the trade names used on Zeiss products. " Zeiss Winkel " originated from the purchase of a factory some 45 years ago from a man named Winkel. Since that time the name Winkel was incorporated on all goods manufactured there. After the changes brought about by the war, it was felt that the name " Carl Zeiss " should no longer be used, and the name " Zeiss Opton " appeared. Since then, however, it has been decided to revert to the " Carl Zeiss " trademark on all products, in view of the pressure and competition from the Russian dominated Jena factory.

At the latter, a large scale purge took place in 1952, because some of the scientists employed there were suspected of communicating with the Western factories. Efforts have been made to prevent the Western organisation from exhibiting its products at international exhibitions, and it has been necessary to fight legal cases on this issue. As a result of a legal action, the Jena factory was prevented from exporting goods bearing the name " Carl Zeiss ". The name was promptly changed to " Ernst Abbe " (whom the Russians denounced as a decadent capitalist!). Another legal action prevented this, and to-day only the name " Jena " appears on goods imported from the Eastern Zone.

Dealing with the Western organisation, Mr. Steeg said that many pre-war manufactures had not yet reappeared, due to the loss of machinery. Theodolites were a notable example. Any new developments resulting from the continued research of scientists had to be paid for from the profits on those which had gone before. At the outset money had been borrowed from the State to set the organisation on its feet again.

At the conclusion of his talk Mr. Steeg invited us to examine a number of new instruments, which were placed on view, and was assisted in demonstrating their use by Mr. K. W. Frank. The exhibition was of great interest, and both Mr. Steeg and Mr. Frank were kept busy answering members' questions.

A.J.S.G.

TECHNICAL ABSTRACTS

Simplified method for the preparation of Mayer's egg albumin.

TRENARY, E. A. (1954). *Amer. J. clin. Path., 24,* 1329.

A method which eliminates filtering is described. Mayer's original formula is used, the mixture is shaken vigorously in a tall cylinder, poured into a flat dish and allowed to stand overnight. Debris and fragments of albuminous membrane are carried to the surface by air bubbles and may be skimmed off after standing, leaving a clear mixture. (Abstracted by J. H. Wyatt in J. med. lab. Tech.).

A.S.

A trichrome staining method for routine use.

BENCOSME, S. A. (1954). *Amer. J. clin. Path., 24,* 1324.

A method is described using haematin, phloxine and saffron. The author claims that the stain is very suitable for routine use and could replace haematoxylin and eosin as a routine method. A technique for fixation, dehydration and embedding in automatic tissue processors using Brasil's fluid is also given. (Abstracted by J. H. Wyatt in J. med. lab. Tech.).

A.S.

A comparison of decalcifying methods.

CLARKE, P.G. (1954). *Amer. J. clin. Path., 24,* 1113.

Recent methods of decalcifying bone were tested in order to find a method which was rapid enough for routine use and also gave good cytological detail. A solution of equal parts of 45% formic acid and1 N. sodium formate was found to be the best. (Abstracted by J. H. Wyatt in J. med. lab. Tech.).

A.S.

Sensitivity tests for the polymixins.

BUSHBY, S. R. M. (1955). *J. clin. Path., 8,* 120.

The difficulties encountered with the disc technique when using the polymixins are commented upon and the author describes a serial dilution method utilising a solid medium and small inocula. The concentration which kills 90% of the organisms is accepted as the minimum inhibitory concentration.

G.W.W.

New concentration technic for the demonstraction of Protozoa and helminth eggs.

BLAGG, W., SCHLOEGEL, E. L., MANSOUR, N. S. and KHALAF, G. I. (1955). *Amer. J. trop. Med. Hyg., 4,* 23.

The M.I.F. (merthiolate-iodine-formaldehyde) preservative stain developed by Sapero and Lawless (1953) for the demonstration of protozoa and helminth eggs in faeces has been in constant extensive use by the writers for over a year. The method proved to be reliable and rapid

for hospital patients and village stool surveys for protozoa, but need was felt for even further improvement to enhance the usefulness of the technique as a combined protozoa and helminth-egg demonstration tool for large scale work. To this end, a concentration technique referred to as M.I.F.C. (merthiolate-iodine-formaldehyde-concentration) was developed.

The writers evaluated the results from the following techniques:—

1. M.I.F. stain preservative technique (Sapero and Lawless, 1953).
2. Brine flotation (Willis, 1951).
3. Zinc sulphate centrifugal flotation (Faust et al, 1939).
4. Formalin ether sedimentation (Ritchie, 1948).
5. Acid ether sedimentation (Teleman, 1908).
6. M.I.F.C.

Technique for M.I.F.C.:—

This procedure employs the M.I.F. solution as a preservative and stain, with the addition of ether to dissolve fats and to float faecal detritus. The preserved specimen is prepared as described by Sapero and Lawless (1953).

Thereafter:—

1. Mix the M.I.F. preserved specimen by shaking vigorously for 5 seconds.
2. Strain this mixture through two layers of wet surgical gauze into a 15 ml. centrifuge tube.
3. Add 4 ml. of ether to the centrifuge tube, insert a rubber stopper, and shake vigorously. (If ether remains on top after shaking, add 1 ml. of tap water and reshake.) The ether used should be refrigerated to reduce volatilization.
4. Remove stopper and let stand for two minutes.
5. Centrifuge for 1 minute at 1,600 r.p.m. Four layers will appear in the tube: (*a*) an ether layer on top, (*b*) a plug of faecal detritus, (*c*) an M.I.F. layer, (*d*) the sediment containing protozoa and helminth eggs on the bottom.
6. Loosen the faecal plug by ringing with an applicator stick.
7. Quickly, but carefully, pour off all but the bottom layer of sediment.
8. Thoroughly mix the sediment, pour a drop on a slide, mount with a cover-glass and examine.

The time required to prepare the M.I.F.C. specimen for examination is about 4 minutes.

It was observed that the number of helminth eggs recovered by each technique was directly proportional to the specific gravity of the solutions employed. Brine solution had a specific gravity of 1.200 and floated a higher percentage of eggs than zinc sulphate solution, which has a specific gravity of 1.180. The opposite is true for sedimentation-centrifugation techniques. The acid-ether (specific gravity 1.028) recovered fewer eggs than formalin ether (specific gravity 1.012) and the M.I.F.C. (specific gravity 0.983) recovered more eggs than either sedimentation method. The specific gravity of the M.I.F. solution cannot be decreased and still float the faecal detritus with ether. In some cases, when the M.I.F. preserved specimen is improperly prepared, it may be necessary to add a few drops of tap water to the M.I.F. mixture if the ether will not mix with the preserved specimen after shaking. This is done to increase the specific gravity of the M.I.F. solution.

Recovery by the M.I.F.C. method indicates that there is no need for two different concentration techniques to be employed, since the number of eggs diagnosed by this technique was greater than that obtained by any combination of the other methods tested.

R.H.

SOCIETY NEWS

NATAL BRANCH

DURBAN

After the last few rather quiet months there are signs of a resurgence of interest and enthusiasm in the Branch. The Annual General Meeting is scheduled for the 17th May and amongst the long list of names of candidates for the Branch elections it is good to see so many of the younger members. The work of the Society and of the Branch has, in the past, been shouldered by a hard-working group of Senior members and these I am sure will be the first to welcome a transfusion of new blood into the life of the Branch.

G. W. WIKELEY,
Acting Hon. Sec./Treas.,
Central Pathological Laboratory, P.B. Jacobs, Natal.

Stop Press

The names of office-bearers for the year 1956 to 1957 are—

Chairman: Mr. A. Scott.
Vice-Chairman: Mr. G. Buckle.
Hon. Secretary/Treasurer: Mr. V. Alberto.
Committee Members: Messrs. J. Herrick, C. J. Scholtz, G. W. Wikeley.
Student Representative: Miss S. Smit.
Auditors: Messrs. R. Horner, T. Neary.
Branch Nomination for National Secretary: Mr. G. W. Wikeley.

STUDENTS' SUB-SECTION

This has been a quiet period for the Students' Sub-Section.

In February, we arranged to attend an Orchestral Concert in the Durban City Hall.

No meeting was held in March, and further arrangements were deferred pending the Branch Elections, which have now been postponed until the 17th May, 1956.

A. J. S. GREENFIELD,
Acting Student Representative.

NOTES FROM EAST LONDON

It is possible to classify pathology laboratories according to the sources from which they draw their work.

Firstly, there is the Public Health laboratory; its work comes mainly from local authorities, public bodies and so on. It is permeated by one tenet—a formula that governs the attitude of its staff towards the work and even to some extent the type of person it employs: " The good (or health, if you like) of the community is more important than that of the individual." A fairly sound statement, perhaps. The detection of pollution in an urban water supply affects the community and is therefore more important than elucidating the cause of Mrs. Jones' pruritus. It falls down, of course, because it doesn't recognize the fact that the community is composed of individuals.

The next type of laboratory is the one attached to a hospital. Here the staff come in closer contact with illness and with the sick. The individual is, or should be, of paramount importance. Laboratory staff must have an entirely different attitude towards the work from their Public Health colleagues. A different code of ethics obtains. Mrs. Jones' pruritus is supremely important—and even more so is Mrs. Jones' attitude towards her pruritus and the people who are trying to discover the cause of it, cure her, rehabilitate her, and make her bed available for the next patient.

Now, both the Public Health and the Hospital laboratories have one advantage in common: they can, to quite a large extent, govern the hours for the collection of specimens and the intake of work. Emergencies can be anticipated in some degree, and the staff can work more or less to a planned schedule.

But the third type of laboratory—the one that takes in work from private practitioners—enjoys no such advantage. The influx of work is erratic in the extreme, and one is likely to be submerged in a deluge of work in the late afternoon; moreover, doctors are for the most part far more clamorous for early reports on their private patients (they would

hardly be human if they weren't) and it is usually quite impossible to plan one's working day.

Now, we in East London are all three types of laboratory in one. Though officially the laboratory for the local general hospital, we do all the public health work for the Eastern Cape Province, and also the private practitioners' work. On top of this we run an extensive mail-order business. It is quite impossible when starting work in the morning to plan one's day in any way. It could be argued that this makes for variety; in fact, of all the grouses that I have listened to over the years (and there have been many), I have never heard anyone complain that the work is monotonous. But against this must be balanced the fact that it is a most wearying and exhausting job. In fact there are times when we feel that it is nothing short of a miracle that we are able to totter out of the building at the end of the day. If you had asked us late yesterday afternoon whether we'd like a nice 9 till 5 job with an orderly day and no rush and pandemonium, we'd have signed up instantly. But this morning—this new day, already pregnant with possibilities, with its variety of interesting work and new cases, would we abandon it? Somehow, I doubt it.

H. FLEETWOOD-HOWARD.

CAPE BRANCH

The main item of interest since the last issue of the Journal has been the Annual General Meeting held on April 25th. A list of office-bearers for the year 1956 to 1957 is given for the convenience of members.

Chairman: Mr. G. Turner.

Hon. Secretary: Mr. J. Maytham.

Committee Members: Messrs. N. Constantine, D. Duncan, A. Stewart, D. Storey.

Student Representatives: Misses St. Leger-Searle, N. Winch.

Auditors: Messrs. G. McManus, B. Neiteler.

National Council Representatives: Messrs. G. Turner, J. Maytham.

Our Winter series of lectures and demonstrations will be starting during May.

J. H. MAYTHAM,
Hon. Secretary,
Dept. of Bacteriology, Medical School, Mowbray, C.P.

SALISBURY AND DISTRICT ASSOCIATION

The Annual General Meeting of the Salisbury and District Association of Medical Laboratory Technologists took place in the Nurses' Lecture Room of the Salisbury General Hospital on March 23rd, 1956.

The Chairman's report referred to the activities of the Association since its inception in April, 1955. Twelve lectures had been given between then and March, 1956. The Chairman was pleased to report that many societies in Salisbury were full of envy for this Association's excellent record of attendances and enthusiasm in all its activities.

A satisfactory credit balance was announced for the year by Mr. N. Gregory, Secretary/Treasurer.

The following officers were elected:—

President: Dr. R. G. Baird.

Vice-President: Dr. G. V. Blaine.

Chairman: Mr. Vance Carlisle.

Vice-Chairman: Mr. D. W. Plampin.

Secretary/Treasurer: Mr. J. McKechnie.

Committee Members: Mr. A. L. C. Hunt, Mr. N. Gregory.

At a committee meeting held later, Mr. D. W. Plampin was asked to act as corresponding member to interested bodies.

The programme of activities for the next three months was announced as follows:—

April: " The Clinical Pattern of Human Parasitism," by Dr. W. K. Blackie.

May: Round Table Discussion between three prominent Salisbury Doctors and three Salisbury Medical Technologists on the subject " Is the best use being made of the Modern Laboratory Technologist's training and experience."

June: " Aspects of Heart Surgery," by Mr. A. J. Graham.

Two extra meetings have been arranged during these months; a talk by Mr. Rundle of Gallenkamp's on " Difficulties of supply and design problems of scientific apparatus manufacturers " and a lecture by Dr. Webster on " Kariba and medical problems encountered."

D. W. PLAMPIN,
39, *Montagu Ave., Salisbury.*

JOHANNESBURG BRANCH

Miss G. P. Shaff and Messrs. A. K. Lorimer, R. Hart and E. Hollingham have passed the final examinations in Medical Technology.

The training scheme for Medical Technologists at the Johannesburg Technical College is well in its stride and more applications to attend the course were received than could be accepted. At present there are 21 First Year Students and 34 in the second year.

READERS' FORUM

Dear Sir,

The March issue of the Journal contains two articles of special interest to medical laboratory technologists in the Southern Transvaal. The one is Mr. Fleetwood Howard's " Notes from East London ", as he stresses a matter which is occupying the thoughts of many medical laboratory workers, especially in the larger laboratories. The chronic shortage of staff could very easily be alleviated by the methods proposed by Mr. Fleetwood-Howard but I am of the opinion that the matter could be solved by the addition of a further measure, namely that Medical Laboratory Technologists themselves be shaken out of the apathy and disinclination to work hard, which is unfortunately all too prevalent.

Medical Laboratory Technologists should begin by getting their own house in order and be willing to contribute to the profession by taking an active interest in their own affairs. They must also be willing to give just that little bit *extra* to their work.

Technologists should also remember that they are members of a profession, not a trade, in exactly the same way as nurses, radiographers, physio-therapists and allied workers are members of honoured professions.

If these matters are honestly dealt with, then we may find that the questions of shortage of staff and insufficient remuneration will right themselves.

The second article refers to " on call " payments and in this connection I must inform you that the South African Institute for Medical Research has successfully applied this system for the last eighteen months. The " on call " payments prove to the Medical Technologists that the employer is not blind to the sacrifices made by the week-end and night-duty workers and that their services are not just taken for granted. We would like to see the " on call " payment system extended to all laboratories in the Union.

As the desire for qualification and registration becomes more general among technologists, the courses will no doubt be extended and a steady flow of trained personnel will become available.

Yours faithfully,

F. A. BRANDT,

S.A.I.M.R., Johannesburg.

FLYING SAUCERS!

(*A student's reply to a lecturer's question*)

" An antibody is a foreign body floating around in the human body."

RANDOM MEANDERINGS

MIDNIGHT OIL

(*Published in commiseration with the students who are at present writing exams.*)

You sit, alone.
It is dark outside
And nothing moves.
Nothing exists
Except the four-walled cube of light that is your world.
The unkind brightness shows the open cupboard doors,
And strewn discarded clothes, haphazard books,
And scribbled scraps of paper on the floor.
A clock ticks on the table, and you hate it
Because the seconds pass
Faster than your eyes can travel across the page.
A cock crows,
And you hear it as if from another world.
It is cold outside
And breezes come through the open window
But your cheeks are flushed from the heat of the fire.
Your eyes ache in burning sockets, but your mind
Is too alert.
A hundred pages to go.
" I am not tired. I shall go to bed at two, and get up early to-morrow."
You repeat unmeaning words, and turn the page
To fresh lines of scrawled blue handwriting
Forgotten in an hour.

S. E. DODDS.

All views and opinions expressed in this Journal are purely those of the contributor concerned, and do not necessarily reflect those of the Society.

NOTICE TO CONTRIBUTORS

All contributions are to be addressed to:—The Editor, "The South African Journal of Medical Laboratory Technology", Laboratory, King Edward VIII Hospital, Durban, Natal.

Contributions may be written in English or Afrikaans, and should preferably be typed in double-spacing on foolscap sheets on one side of the paper only.

Figures should be drawn in Indian ink, and all figures and tables should be labelled as such (e.g. Figure 1, Table 1, etc.).

Authors should make adequate references to previous works on their subjects. These should be set out as follows:—Author's surname and initials of Christian names; the year of publication (in parentheses); the name of the journal, which should be abbreviated according to the World List of Scientific Periodicals (see below); the volume number (underlined); and the first page reference.

Example:—Moron, I. B. (1960). J. unsuccess. Med., 20, 99. References to books should give the author's name and initials, the year of publication, title of book, name of publisher, and town in which published.

References should be arranged in alphabetical order of the authors' surnames. If more than one work by the same author is listed, these should appear in chronological order.

Technologists are reminded that regulations demand that all original articles of a technical or scientific nature must be approved by the heads of their departments before being submitted for publication.

Title abbreviations according to World List of Scientific periodicals

All nouns are given capital letters, and adjectives small letters. Articles, conjunctions and prepositions are omitted.

Examples:—

J. Amer. med. Ass.	*S. Afr. J. clin. Sci.*
Lancet	*Stain Tech.*
Amer. J. clin. Path.	*J. Bact.*

REPRINTS AND PHOTOGRAPHS

If requested before publication, 24 reprints of original articles will be supplied free to contributors. As a temporary measure, contributors are asked to defray the costs of publishing photographs accompanying articles.

KENNISGEWING AAN INSENDERS

Alle bydrae moet as gevolg geadresseer word:—Die Editeur, „Die Suid Afrikaanse Joernaal van Mediese Technologie", Laboratorium, King Edward VIII Hospitaal, Durban, Natal.

Bydrae mag in Engels of Afrikaans geskryf word en moet verkieslik getik wees dubbel spasiering op folio-papier en net op een kant van die vel.

Figure moet in Indiese ink geteken word en alle figure en tabelle moet geëtikeer word as sulks (b.v. Figuur 1, Tabel 1, ens.).

Auteurs moet voldoende referensies gee tot vorige werke oor hulle onderwerpe. Die moet as volg uiteengesit word:—Auteur se familienaam en voorletters; die jaar van uitgawe (in hakies); die naam van die Joernaal, wat moet verkort volgens die Wêreld Lys van Wetenskaplike Tydskrifte (sien hieronder)r die volume nommer (onderstreep); en die eerste pagina referensie.

Voorbeeld:—Moron, I. B. (1960). J. unsuccess. Med., 20, 99. Referensies tot boeke moet die auteur se naam en voorletters meld, die jaar van uitgawe, titel van boek, naam van uitgewer, en stad waar dit gepubliseer is.

Referensies moet in alfabetiese orde, volgens auteurs se familienaam gerangskik word. Indien meer dan een werk deur dieselfde auteur gemeld word, moet dit in tydsorde voorkom.

Tegnoloë word daaraan herinner dat regulasies vereis dat alle oorspronklike artikels van tegniese of wetenskaplike aard moet die goedkeuring dra van hulle departementale hoofde voor dit ingestuur word vir publikasie.

Titel verkortings volgens Wêreld Lys van Wetenskapliker Tydskifte

Alle selfstandige naamwoorde moet begin met hoofletters en byvoeglike naamwoorde met klein letters. Artikels, verbindings, en voorsetsels word uitgelaat.

Voorbeelde:—

J. Amer. med. Ass.	*S. Afr. J. clin. Sci.*
Lancet	*Stain Tech.*
Amer. J. clin. Path.	*J. Bact.*

HERDRUKKE EN FOTOGRAWE

Indien aanvraag ingedien word voor publisering, sal 24 herdrukke van oorspronklike artikels vry aan beydraers verskaf word. As in tydelike maatreel word bydraers gevra om die koste van publisering van fotos wat saam met artikels gaan self te betaal.